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x' and y' , supposing x and y to be constant, we should find another equation, which, taken along with that of the normal arc, would furnish the values of x and y , the coordinates of the point in which two consecutive normal arcs intersect: and thus, as in plane geometry, we find the evolute of a spherical curve.

Let 2γ be the diametral arc of the circle of the sphere which osculates a spherical curve at the point x', y' , Mr. Graves finds that

$$\tan \gamma = \pm \frac{[dx'^2 + dy'^2 + (x'dy' - y'dx')^2]^{\frac{1}{2}}}{(1 + x'^2 + y'^2)^{\frac{3}{2}}(dx'd^2y' - dy'd^2x')}.$$

For the rectification and quadrature of a spherical curve given by an equation between rectangular coordinates, the following formulæ are to be employed:—

$$ds = \frac{\sqrt{dx'^2 + dy'^2 + (x'dy' - y'dx')^2}}{1 + x'^2 + y'^2},$$

and

$$d(\text{area}) = \frac{ydx}{(1 + x^2)\sqrt{1 + x^2 + y^2}}.$$

In the preceding equations the radius of the sphere has been supposed = 1.

The method of coordinates here employed by Mr. Graves is entirely distinct from that which is developed by Mr. Davies in a paper in the 12th Vol. of the Transactions of the Royal Society of Edinburgh. Mr. Graves apprehends, however, that he has been anticipated in the choice of these coordinates by M. Gudermann of Cleves, who is the author of an "Outline of Analytic Spherics," which Mr. Graves has been unable to procure.

The President communicated a new demonstration of Fourier's theorem.

A letter was read from Professor Holmboe, accompanying his memoir, "*De Priscâ re Monetariâ Norvegiæ*," &c., and requesting to know from the Academy whether any of the coins described in that work are found in Ireland.*

July 12.

SIR WM. R. HAMILTON, LL.D., President, in the Chair.

Part I. of a "Memoir on the Dialectic Method of Elimination," by J. J. Sylvester, Esq. A. M., of Trinity College, Dublin, and Professor of Natural Philosophy in University College, London, was read.

The Author confines himself in this part to the treatment of two equations, the final and other derivees of which form the subject of investigation.

The Author was led to reconsider his former labours in this department of the general theory by finding certain results announced by M. Cauchy in *L'Institut*, March Number, of the present year, which flow as obvious and immediate consequences from Mr. Sylvester's own previously published principles and method.

Let there be two equations in x ,

$$\begin{aligned} U &= ax^m + bx^{m-1} + cx^{m-2} + ex^{m-3} + \&c. = 0, \\ V &= ax^m + \beta x^{m-1} + \lambda x^{m-2} + \&c. = 0, \end{aligned}$$

and let $n = m + \iota$, where ι is zero or any positive value (as may be).

Let any such quantities as $x^r U$, $x^e V$, be termed augmentatives of U or V .

To obtain the derivee of a degree s units lower than V , we must join s augmentatives of U with $s + \iota$ of V . Then out of $2s + \iota$ equations

* The Committee of Antiquities, having been consulted on this point, reported in the negative.